TECHNICAL REVIEW DOCUMENT
For
RENEWAL TO OPERATING PERMIT 98OPAL203

Public Service Company – Alamosa Combustion Turbines
Alamosa County
Source ID 0030007

Prepared by Jacqueline Joyce
September and October 2008
Revised November 2008 and January 2009

I. Purpose:

This document will establish the basis for decisions made regarding the applicable requirements, emission factors, monitoring plan and compliance status of emission units covered by the renewed operating permit proposed for this site. The current Operating Permit was issued April 1, 2004. The expiration date for the permit is April 1, 2009. This document is designed for reference during the review of the proposed permit by the EPA, the public, and other interested parties. The conclusions made in this report are based on information provided in the renewal application submitted February 19, 2008, comments on the draft permit and technical review document submitted on January 9, 2009 via e-mail, previous inspection reports and various e-mail correspondence, as well as telephone conversations with the applicant. Please note that copies of the Technical Review Document for the original permit and any Technical Review Documents associated with subsequent modifications of the original Operating Permit may be found in the Division files as well as on the Division website at http://www.cdphe.state.co.us/ap/Titlev.html. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

Any revisions made to the underlying construction permits associated with this facility made in conjunction with the processing of this operating permit application have been reviewed in accordance with the requirements of Regulation No. 3, Part B, Construction Permits, and have been found to meet all applicable substantive and procedural requirements. This operating permit incorporates and shall be considered to be a combined construction/operating permit for any such revision, and the permittee shall be allowed to operate under the revised conditions upon issuance of this operating permit without applying for a revision to this permit or for an additional or revised construction permit.

II. Description of Source

This facility is classified as an electric services facility under the Standard Industrial Classification 4911. This facility is an unmanned electric power generating station that consists of 2 simple cycle combustion turbines that can generate up to 20 MW of power. Typically this facility is used to service peak electrical load demands. The turbines are capable of burning natural gas, Nos. 1 and/or 2 fuel oil or combination. Based on the

information available to the Division and provided by the applicant, it appears that no modifications to these significant emission units has occurred since the original issuance of the operating permit.

Note that neither turbine is equipped with a control device and therefore the Compliance Assurance Monitoring (CAM) requirements do not apply to these units.

The facility is located near the town of Alamosa in Alamosa County in an area designated as attainment for all criteria pollutants.

New Mexico is an affected state within 50 miles of the plant. The following Federal Class I designated areas are within 100 kilometers of the plant: The Great Sand Dunes National Monument and the La Garita, Weminuche and Wheeler Peak National Wilderness Areas.

The summary of emissions that was presented in the Technical Review Document (TRD) for the original permit issuance has been modified to update actual emissions and to better reflect potential to emit. Potential to emit is shown in the table below:

Potential to Emit (tons/yr)						
	Natural Gas			Distillate (Nos. 1 and/or 2) Fuel Oil		
	Turbine 1	Turbine 2	Total	Turbine 1	Turbine 2	Total
PM[1]	51	122.5	173.5	51	122.5	173.5
PM_{10}[2]	51	122.5	173.5	51	122.5	173.5
SO_2[3]	1,224.65	1,224.65	2,339.30	1,224.65	1,224.65	2,339.30
NO_X	362.5	362.5	725	898.1	898.1	1,796.2
CO	92.9	92.9	185.8	3.4	3.4	6.8
VOC	2.4	2.4	4.8	0.4	0.4	0.8
Pb[4]	N/A	N/A	N/A	0.0143	0.0143	0.0286
Total HAPS	See Table on Page 8		2.09	See Table on Page 8		2.40
Highest Single HAP[5]			1.45			1.61

[1]PTE, when burning any fuel, is based on the following: for turbine 1 the permitted PM limit of 51 tpy and for turbine 2 the PM limit (0.12 lbs/mmBtu) x design heat rate x 8760 hrs/yr.
[2]PM_{10} was presumed to equal PM
[3]PTE, when burning any fuel, for both turbines is based on the Reg 1 SO_2 limit (1.2 lbs/mmBtu) x design heat rate x 8760 hrs/yr.
[4]Lead (Pb) emissions are based on emission factors from AP-42, Section 3.1 (dated 4/00), Table 3.1-5
[5]Highest single HAP is formaldehyde for natural gas and manganese for distillate oil.

Potential to emit for the turbines are based on the information identified in the above table and the maximum hourly fuel consumption rate, the emission factors listed in the permit (AP-42) and 8760 hrs/yr of operation.

In the above table for potential to emit, the breakdown of HAP emissions by fuel burned and individual HAPs is provided on page 8 of this document. HAP emissions are based

on the maximum hourly fuel consumption rate, 8760 hrs/yr of operation and AP-42 emission factors (Section 3.1, dated 4/00, Tables 3.1-3 and 3.1-4).

Actual emissions are based on APENs submitted on April 27, 2004 (2003 data) and are shown in the table below.

Actual Emissions (tons/yr)						
	PM	PM_{10}	SO_2	NO_X	CO	VOC
T001	0.6	0.6	0.1	5.9	1.5	0.3
T002	1	1	0.2	10.3	2.6	0.6
Total	1.6	1.6	0.3	16.2	4.1	0.9

MACT Requirements

Case-by-Case MACT - 112(j) (40 CFR Part 63 Subpart B §§ 63.50 thru 63.56)

Under the federal Clean Air Act (the Act), EPA is charged with promulgating maximum achievable control technology (MACT) standards for major sources of hazardous air pollutants (HAPs) in various source categories by certain dates. Section 112(j) of the Act requires that permitting authorities develop a case-by-case MACT for any major sources of HAPs in source categories for which EPA failed to promulgate a MACT standard by May 15, 2002. These provisions are commonly referred to as the "MACT hammer".

Owners or operators that could reasonably determine that they are a major source of HAPs which includes one or more stationary sources included in the source category or subcategory for which the EPA failed to promulgate a MACT standard by the section 112(j) deadline were required to submit a Part 1 application to revise the operating permit by May 15, 2002. The source submitted a notification indicating that the Alamosa facility was a **NOT** a major source for HAPS, with equipment under the combustion turbine source category.

The Division presumes the PSCo's minor source determination is based on using AP-42 emission factors to estimate potential HAP emissions. Initially the Division conducted its own analysis using the worst case emission factors from AP-42, the California Air Toxics Emission Factor (CATEF) database and a memo dated August 23, 2003 from Melanie Taylor, Alpha-Gamma Technologies, Inc. to Sims Roy, EPA OPQPS ESD Combustion Group, titled "Revised HAP Emission Factors for Stationary Combustion Turbines". Based on this analysis, the facility would be considered a major source for HAPS, because formaldehyde from the turbines, when burning natural gas, would be over 10 tons/yr based on an emission factor from the EPA Memo.

According to the final MACT rule for Stationary Combustion Turbines (published in the federal register on March 5, 2004), EPA indicates that "We believe that the emission factors presented in the memorandum provide the most accurate information on stationary combustion turbine emission factors" (1st column, 2nd paragraph on page

10518). Although the Division would agree with this position, since HAP emissions are much higher based on the emission factors in the EPA memo, the Division reviewed available documentation in order to determine which emission factors were appropriate to use.

The Division had used the emission factors in the EPA Memo for diffusion flame turbines ≤ 50 MW at all loads using natural gas as fuel in our analysis (note that there were no formaldehyde emissions factors for turbines ≤ 50 MW using distillate oil as fuel). In reviewing this memo, it appears that the emission factors are based on very few tests (4 for natural gas units, with 3 tests on turbines ≤ 50 MW. However, the AP-42 Background Document (dated April 2000), indicates that the emission factors for formaldehyde are based on 33 test (with 22 of those at a load of 80% or more). The AP-42 test data is likely based on both diffusion flame and lean pre-mix units, while the EPA Memo separates these two categories of turbines. However, in looking at the database of turbine test data associated with the AP-42 emission factors and considering all turbines from the same manufacturer (General Electric) and comparable size (17 – 34 MW), the data shows that using AP-42 emission factors is appropriate in this case. It should be noted that the summary table of emission factors in the AP-42 Background Document (Table 3.4-1) lists a higher emission factor for formaldehyde for natural gas fired turbines at all loads. Using this higher emission factor, formaldehyde emissions are 6.7 tons per year from both turbines, which is below the 10 tons per year threshold. Therefore, the Division considers that estimating HAP emissions using the AP-42 emission factors is appropriate and that the facility is **NOT** a major source for HAPS.

Although the facility is not a major source for HAPS, the EPA has been promulgating rules for area sources (sources that are not major). Those requirements that could potentially apply to this facility are discussed below:

Paint Stripping and Miscellaneous Surface Coating at Area Sources (40 CFR Part 63 Subpart HHHHHH)

The final rules for paint stripping and miscellaneous surface coating were published in the federal register on January 9, 2008 and apply to area sources that perform paint stripping operations using methylene chloride, spray application of coatings to motor vehicles and mobile equipment and spray application of coatings that contain the target HAPS (chromium, lead, manganese, nickel or cadmium). As indicated in 40 CFR Part 63 § 63.11170(a)(2) and (3), spray applications (to motor vehicles and using coatings that contain the target HAPS) that meet the definition of facility maintenance are not subject to the requirements in this rule. The Division considers that any spray coatings of motor vehicles and mobile equipment and spray application of coatings that contain the target HAP at this facility would meet the definition of facility maintenance. The source indicated that no paint stripping activities occur at the facility; therefore, the provisions in 40 CFR Part 63 Subpart HHHHHH do not apply.

Reciprocating Internal Combustion Engines (40 CFR Part 63 Subpart ZZZZ)

The reciprocating internal combustion engine (RICE) MACT was signed as final on February 26, 2004 and was published in the Federal Register on June 15, 2004. Under this rulemaking only RICE that were > 500 hp and located at major sources of HAPS were subject to the requirements.

However, revisions were made to the RICE MACT to address engines ≤ 500 hp at major sources and all size engines at area (minor) sources. These revisions were published in the federal register on January 18, 2008. Under these revisions, existing compression ignition (CI) engines, 2-stroke lean burn (2SLB) and 4-stroke lean burn (4SLB) engines were not subject to any requirements in either Subparts A or ZZZZ (40 CFR Part 63 Subpart ZZZZ § 63.6590(b)(3)). For purposes of the MACT, engines located at area sources, are existing if they commenced construction or reconstruction before June 12, 2006. The two start-up engines included in the insignificant activity list are considered existing and are therefore not subject to the MACT. Since the source has not indicated that any additional engines have been installed at the facility, the Division considers that there are no new engines and therefore, no engines subject to the RICE MACT.

III. Discussion of Modifications Made

Source Requested Modifications

The source's requested modifications identified in the renewal application were addressed as follows:

Page following cover page

The Responsible Official has been changed as indicated in the renewal application.

Other Modifications

In addition to the source requested modifications, the Division has included changes to make the permit more consistent with recently issued permits, include comments made by EPA on other Operating Permits, as well as correct errors or omissions identified during inspections and/or discrepancies identified during review of this renewal.

The Division has made the following revisions, based on recent internal permit processing decisions and EPA comments to the Alamosa Combustion Turbines Renewal Operating Permit. These changes are as follows:

Page Following Cover Page

- Monitoring and compliance periods and report and certification due dates are shown as examples. The appropriate monitoring and compliance periods and report and

certification due dates will be filled in after permit issuance and will be based on permit issuance date. Note that the source may request to keep the same monitoring and compliance periods and report and certification due dates as were provided in the original permit. However, it should be noted that with this option, depending on the permit issuance date, the first monitoring period and compliance period may be short (i.e. less than 6 months and less than 1 year).

General

- The Reg 3 citations were revised throughout the permit, as necessary, based on the recent revisions made to Reg 3.

Section I – General Activities and Summary

- Revised the language in Condition 1.4 to include Section IV, Condition 3.d and to note that only part of Condition 3.g is state-only enforceable (last paragraph). Note that Section IV, Condition 3.d (affirmative defense provisions for excess emissions during malfunctions) is state-only until approved by EPA in the SIP.

- Made minor revisions to the language in Condition 3.1 to be more consistent with other permits.

- Added a column to the Table in Condition 6.1 for the startup date of the equipment.

Sections II.1 and 2 – Turbines burning either only natural gas or Nos. 1 and/or 2 fuel oil

- Based on EPA's response to a petition on another Title V operating permit, minor language changes were made to various permit conditions (both in the table and the text) to clarify that only natural gas and/or Nos. 1 and/or 2 fuel oil are used as fuel for permit conditions that rely on fuel restriction for the compliance demonstration.

- Replaced the phrase "lowest gross" with "higher" in Condition 2.7.

Section II.3 – Turbines burning a combination of fuels (natural gas and/or Nos. 1 and/or 2 fuel oil)

- Minor language changes were made to indicate that only natural gas and/or Nos. 1 and/or 2 fuel oil may be burned.

Section III – Permit Shield

- The citation for the permit shield has been revised to reflect revisions and restructuring of Reg 3 and to remove Reg 3, Part C, Section V.C.1.b and C.R.S. § 25-7-111(2)(I) since they don't address the permit shield.

- Since Reg 3 has been revised, the reference to the PSD regulations was revised in Section 1 of the permit shield.

Section IV – General Conditions

- The upset requirements in the Common Provisions Regulation (general condition 3.d) were revised December 15, 2006 (effective March 7, 2007) and the revisions were included in the permit. Note that these provisions are state-only enforceable until approved by EPA into Colorado's state implementation plan (SIP).

- Removed the statement in Condition 3.g (affirmative defense provisions) addressing EPA approval and state-only applicability. The EPA has approved the affirmative defense provisions, with one exception and the exception, which is state-only enforceable is identified in Section I, Condition 1.4.

- Replaced the reference to "upset" in Condition 5 (emergency provisions) and 21 (prompt deviation reporting) with "malfunction".

- General Condition No. 21 (prompt deviation reporting) was revised to include the definition of prompt in 40 CFR Part 71.

- Replaced the phrase "enhanced monitoring" with "compliance assurance monitoring" in General Condition No. 22.d.

Appendices

- Appendix B and C were replaced with latest version.

- Changed the mailing address for EPA in Appendix D.

Hazardous Air Pollutant Emissions

AP-42 Emission Factors[1]

Pollutant	Natural Gas		Distillate Fuel	
	Emission Factor (lb/mmBtu)	Emissions[2] (tons/yr)	Emission Factor (lb/mmBtu)	Emissions[2] (tons/yr)
Acetaldehyde	4.00E-05	8.16E-02		
Acrolein	6.40E-06	1.31E-02		
Benzene	1.20E-05	2.45E-02	5.50E-05	1.12E-01
Ethylbenzene	3.20E-05	6.53E-02		
Formaldehyde	7.10E-04	1.45E-00	2.80E-04	5.72E-01
Naphthalene			3.50E-05	7.14E-02
Propylene Oxide	2.90E-05	5.92E-02		
Toluene	1.30E-04	2.65E-01		
Xylenes	6.40E-05	1.31E-01		
Manganese			7.90E-04	1.61E-00
Lead			1.40E-05	2.86E-02
Total		2.09E-00		2.40E-00

[1]from AP-42, Section 3.1 (dated 4/00), Tables 3.1-3 and 3.1-4

[2]Emissions are from both turbines combined